

SALVIA CORIANA SP. NOV. (LAMIACEAE),
A NEW SPECIES FROM A CLOUD FOREST IN WESTERN GUATEMALA

Taylor Sultan Quedensley

Mario E. Véliz Pérez

University of Texas at Austin
Plant Resources Center
Austin, Texas 78712, U.S.A.
quedensley@mail.utexas.edu

University of San Carlos of Guatemala
BIGU Herbarium
Guatemala City, GUATEMALA
marioeveliz@yahoo.com

ABSTRACT

Salvia coriana is a new species of herb described from two localities in a tropical montane cloud forest in western Guatemala. It appears to be closely related to *Salvia recurva*, but has blue corollas and a shorter corolla tube. A key to identify the *Salvia* species found on Pico Zunil is provided.

RESUMEN

Se describe **Salvia coriana** como una especie nueva, basada en material procedente de dos localidades en un bosque de niebla de Guatemala occidental. La nueva especie es parecida a *Salvia recurva*, pero difiere de ella por tener corolas azules con un tubo más corto. Se proporciona una clave para identificar las especies de *Salvia* presentes en el Pico Zunil.

Recent floristic work on Pico Zunil in western Guatemala has revealed a previously unknown species of *Salvia*, the largest genus in the Lamiaceae with over 900 described species (Hedge 1992; Walker & Elisen 2001). Its centers of diversity include Asia and the Americas, with up to 500 species found in the New World (Epling 1939; Hedge 1960, 1992; Harley 2004).

Salvia coriana Quedensley & Véliz, sp. nov. (**Fig. 1**). TYPE: GUATEMALA. QUETZALTENANGO. Municipio de Zunil: 5 km SE of Xela, NW slopes of Pico Zunil, dense cloud forest on trail above the hot springs Aguas Amargas, 2056 m, 9 Dec 2009, N14°45'23.4"W91°29'21.1" T.S. Quedensley, M.E. Véliz & L.E. Velásquez M.10187 (HOLOTYPE: BIGU; ISOTYPES: CAS, F, NY, TEX, US).

Salvia recurva Benth. affinis sed differt corollis azureis tubis 8–10 mm longis labiis minoribus inequalibus, labio infero brevior quam labio supero.

Lianas to 12 meters in height, branches erect and arching, with striate, square stems. **Woody stems** 4–5 cm in diameter, sulcate, glabrate; younger stems green, sulcate, puberulent. **Leaves** opposite; petioles 3–5 cm long; blades 5–9 cm wide, 7–12 cm long, ovate to deltoid; margins coarsely serrate, bases truncate, apices acute to acuminate; adaxial surface glabrous, bullate; abaxial surface hispidulous on veins. **Inflorescences** 4–7 cm of lax, 3–6 flowered verticillasters. **Verticillasters** of flowers separated, forming interrupted racemes; subtended by deciduous bracts, lanceolate, apices acute to acuminate, ca. 2 mm wide, 3–4 mm long. **Calyces** becoming dark purple with age, strigose; upper lip 6-veined, 10–14 mm long, calyx apices acuminate. **Corollas** sky blue, corolla tube 8–10 mm long, upper lip hispidulous, 12–16 mm long; lower lip glabrous, reflexed, 9–11 mm long. **Stamens** 2, included, attached near base of corolla throat; filament 1.4–1.6 mm long; staminal papillae purple, 4 mm long, attached on corolla throat and perpendicular to filament. **Style** exserted, pilose, ca. 20 mm long, bifurcate, upper branch 2–3 times as long as lower branch. **Seeds** not observed.

Etymology.—The specific epithet refers to Jean Coria (1926–2008), loving friend to many at the San Francisco Botanical Garden and an avid grower of *Salvia*. Her kindness and sweet smile will never be forgotten by the first author of this paper.

KEY TO THE SPECIES OF SALVIA REPORTED FROM PICO ZUNIL

1. Corollas scarlet or red.
2. Calyx in fruit less than 5 mm; herbs _____ **S. cinnabarina**

2. Calyx in fruit 7–12 mm long; shrubs.
 3. Corolla tube ventricose _____ *S. holwayi*
 3. Corolla tube not ventricose.
 4. Upper corolla lip 10–12 mm long, lower lip short or none _____ *S. excelsa*
 4. Upper corolla lip 2.5–3 mm long, subbequal _____ *S. curtiflora*
1. Corollas white, blue, or purple.
 5. Corolla tube 4–8 mm long.
 6. Inflorescence interrupted, the verticils of flowers separate _____ *S. tiliaeifolia*
 6. Inflorescence dense and continuous.
 7. Calyx in flower 7–8 mm long, densely pubescent _____ *S. hispanica*
 7. Calyx in flower 3.5–5 mm long, sparsely pubescent to glabrate _____ *S. polystachya*
5. Corolla tube usually 10–20 mm long.
 8. Corollas sky blue; liana _____ *S. coriana*
 8. Corollas light purple; shrub _____ *S. purpurea*

Distribution and habitat.—*Salvia coriana* is known from only two adjacent localities at approximately 2000 meters on the northwestern slopes of Pico Zunil. Pico Zunil (14°46'N; 91°27'W) is a mountain with a peak elevation of 3,542 meters (Williams 1960; Gall 1983; Quedensley & Bragg 2007). Pico Zunil is part of the Sierra Chuatroj range formed by the Zunil ridge that extends from south to north perpendicular to the Pacific coast between the departments of Quetzaltenango and Sololá (Fig. 2). The Sierra Chuatroj, located between Rio Samalá to the west and Rio Nahualá to the east, is part of a volcanic belt that extends 120 km from south of Guatemala City to the Mexican border. The two localities include the roadside to the hot springs Aguas Amargas, and trails through dense forest with rocky outcrops above the hot springs. Associated trees included *Billia hippocastanum*, *Bocconia arborea*, *Leandra subseriata*, *Oreopanax xalapensis*, *O. peltatus*, *Podachnium eminens*, *Urera caracasana*, and *Wigandia urens*. Shrubs included *Alloispermum integrifolium*, *Aphelandra schiedeana*, *Monochaetum subtriplinervium*, *Montanoa pteropoda*, *Piptothrix areolaris*, *Tibouchina longisepala*, and *Vernonia arborescens*. Common herbs were represented by *Ageratum rugosum*, *Fleischmannia pycnocephaloides*, *Heterocentron subtriplinervium*, *Nasa triphylla* subsp. *rudis*, and *Salvia purpurea*.

Phenology.—Observed in flower in late December and early January.

This species appears to be morphologically related to *Salvia recurva*, but *S. coriana* is a liana, the leaves are smaller, the upper and lower corollas lips are shorter in length, and the corollas are blue. *Salvia recurva* has not yet been reported from the volcanic belt of Guatemala and in that country is known only from the Department of Huehuetenango at elevations above 2500 meters (Standley & Williams 1970). Morphology suggests that *Salvia coriana* is in the subgenus *Calosphace* (Benth.) Benth., and within the section *Dusenostachys* Epl. According to Standley and Steyermark (1946), 45 species of *Salvia* are found in Guatemala, and 312 species are located in adjacent Mexico (Ramamoorthy & Elliot 1993). Original collections of *S. coriana* included only two individual plants at the two reported localities. A return visit to the site in Dec 2009 revealed to the authors a large population of *S. coriana* above Aguas Amargas growing high up into cloud forest trees and shrubs. Pico Zunil has been documented to consist of relatively high numbers of endemic Guatemalan species, and two so far (*Ageratina zunilensis*: Asteraceae and *Stanmarkia spectabilis*: Melastomataceae) are considered to be endemic to the Sierra Chuatroj (Nash & Williams 1976; Almeda 1993; Quedensley 2007). More field work in the volcanic belt of Guatemala is required to illustrate the distribution of *S. coriana*, especially in the region of Pico Zunil.

PARATYPES: **GUATEMALA. QUETZALTENANGO. Municipio de Zunil:** 5 km SE of Xela, NW slopes of Pico Zunil, dense cloud forest on trail above the hot springs Aguas Amargas, 2094 m, 5 Jan 2006. N14°45'22.0" W91°29'21.4" T. Sultan Quedensley & J.E. York 4810 (BIGU, F, TEX), disturbed cloud forest along road to the hot springs Aguas Amargas, 2000-m, 2 Jan 2008. N14°45'21.6" W91°29'21.6" T. S. Quedensley & G. Yacalis 5173 (BIGU, CAS, F, NY, TEX, US, UVAL).

ACKNOWLEDGMENTS

Funding for field work was provided from the University of Nebraska at Omaha (UNO) Department of Biology, the Graduate College, the College of Arts and Sciences, and the University Committee on Research. Funding



FIG. 1. *Salvia coriana*. A. Flower, side view. B. Flower, front view (Photos by T.S. Quedensley)

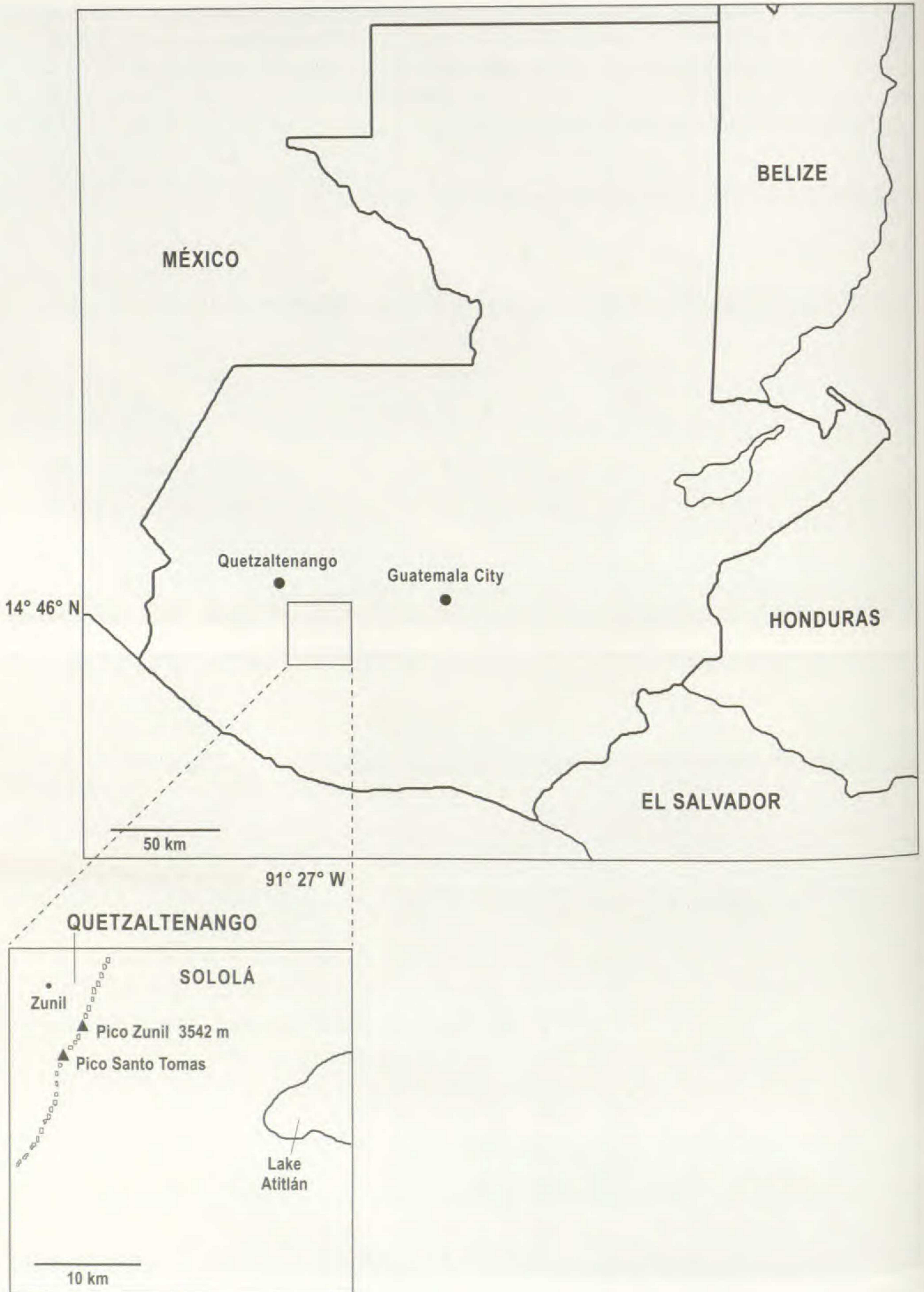


FIG. 2. Type locality of *Salvia coriana* in Guatemala. Pico Zunil is located on the border between the departments of Quetzaltenango and Sololá.

was also provided by the University of Texas at Austin College of Natural Sciences, Graduate College, and Plant Biology Graduate Program. Additional funding was provided by the NASA Nebraska & EPSCoR Space Grant Program, the Field Museum of Natural History in Chicago, the New York Botanical Garden, and the American Philosophical Society of America through the Lewis and Clark Field Scholar Program.

We are grateful to Justin York, Timmy Buxton (Cabrillo College), Galen Yacalis (University of Texas at Austin), and Luis Velásquez Méndez (University of San Carlos) for field assistance. Thanks also to Otoniel Chacón and the Consejo Nacional de Áreas Protegidas (CONAP) for providing the permits to collect and transport specimens in Guatemala and to export specimens to the United States, and to Roberto Pontuj and the Municipality of Zunil for giving permission to collect on Pico Zunil. We thank Guy Nesom for the Latin diagnosis, and Aaron Jenks and an anonymous reviewer for providing reviews on the manuscript. Lastly, we are indebted to Tom Wendt of The University of Texas at Austin Plant Resources Center and the BIGU herbarium at the University of San Carlos in Guatemala City.

REFERENCES

- ALMEDA, F. 1993. *Stanmarkia*, a new genus of Melastomataceae from the volcanic highlands of western Guatemala and adjacent Mexico. *Brittonia* 45:187–203.
- EPLING, C. 1939. A revision of *Salvia* subgenus *Calosphace*. *Feddes Repert. Spec. Nov. Regni Veg.* 110:1–383.
- GALL, F. 1983. Diccionario Geográfico de Guatemala, de la letra Q a la S. Compilación crítica. Tomo III. Instituto Geográfico Nacional.
- HARLEY, R.M. 2004. *Salvia* L. In: K. Kubizki, ed. The families and genera of vascular plants VII. Springer Verlag, Berlin. Pp. 235–236.
- HEDGE, I.C. 1960. Notes on some cultivated species of *Salvia*. *J. Royal. Hortic. Soc.* 81:451–454.
- HEDGE, I.C. 1992. A global survey of the biogeography of the Lamiaceae. In: Harley, R.M. and T. Reynolds, eds. *Advances in Labiatae Science*. Royal Bot. Gardens, Kew. Pp. 7–18.
- QUEDENSLEY, T.Q. AND T.B BRAGG. 2007. The Asteraceae of northwestern Pico Zunil, a cloud forest in western Guatemala. *Lundellia* 10:49–70.
- RAMAMOORTHY, T.P. AND M. ELLIOTT. 1993. Mexican Lamiaceae: diversity, distribution, endemism, and evolution. In: Ramamoorthy T.P., R. Bye, A. Lot, and J. Fa, eds. *Biological diversity in Mexico: origins and distribution*. Oxford University Press, New York. Pp. 513–539.
- STANDLEY, P.C. AND L.O.WILLIAMS. 1970. Flora of Guatemala. *Fieldiana Bot.* 24(9):273–301.
- STANDLEY P.C., L.O.WILLIAMS, AND D.N. GIBSON. 1973. Flora of Guatemala: Asteraceae. *Fieldiana, Bot.* 24(12):1–420.
- WALKER, J. B. AND W.J. ELISENS. 2001. A revision of *Salvia* section *Heterosphace* (Lamiaceae) in Western North America. *Sida* 19:571–589.
- WILLIAMS, H. 1960. Volcanic history of the Guatemalan highlands. *University of California Pub. Geol. Sci.* 38:1–86.